Extending the assessment of patient-centredness in health care: Development of the updated Valuing Patients as Individuals Scale using exploratory factor analysis

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Assessing person-centredness: Developing the updated Valuing Patients as Individuals Scale (uVPAIS) for use in an adult, acute hospital setting using Exploratory Factor Analysis

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Abstract

Background: Healthcare in the United Kingdom and beyond is required to deliver high quality, person-centred care that is clinically effective and safe. However, patient experience is not uniform, and complaints often focus on the way patients have been treated. Legislation in United Kingdom requires health services to gather and use patients' evaluations of care to improve services.

Objectives: To update and re-validate the Valuing Patients as Individuals Scale for use as a patient appraisal of received healthcare.

Methods/Setting/Participants: Methods included scoping literature reviews, cognitive testing of questionnaire items with patient and healthcare staff using focus groups, and exploratory factor analysis. Data were collected from 790 participants across 34 wards in two acute hospitals in one National Health Service Health Board in Scotland from September 2011 to February 2012. Ethics and Research and Development approval were obtained.

Results: Fifty six unique items identified through literature review were added to 72 original Valuing Patients as Individuals Scale items. Face validity interviews removed ambiguous or low relevance items leaving 88 items for administration to patients. Two hundred and ninety questionnaires were returned, representing 37% response rate, 71 were incomplete. Thus 219 complete data were used for Exploratory Factor Analysis with varimax orthogonal rotation. This revealed a 31 item, three factor solution, Care and Respect; Understanding and Engagement; Patient Concerns, with good reliability, concurrent and discriminant validity in terms of gender. A shortened 10 item measure based on the top 3 or 4 loading items on each scale was comparable.

Discussion and conclusion: The Updated Valuing Patients as Individuals Scale is sufficiently developed to capture patient appraisals of received care. The short scale version is now being routinized in real-time evaluation of patient experience contributing to this United Kingdom, National Health Service setting meeting its policy and legislative requirements.

Key words

Healthcare surveys; Patient acceptance of healthcare; Patient-centred care; Healthcare quality assessment; Quality of Healthcare; Delivery of healthcare; Hospitals, general; Exploratory factor analysis

Introduction

Person-centredness is a term used to describe a standard of care that places the patient at the centre of the care process (McCance, McCormack, & Dewing, 2011). This broad concept is highly relevant both within and across international healthcare policy, despite often being poorly defined, (e.g. World Health Organisation, 2006). Its development can be tracked to Nursing theory in America during the 1960s (Kitwood, 1997; Rogers, 1961) and in the form of patient-centred care all the way back to Florence Nightingale in the 19th century (Nightingale, 1860). Despite the centrality of person-centredness within healthcare policy, recent failings in person-centred care delivery in the UK (Frances, 2013) have demonstrated starkly the need to embed patients' appraisals of their recent healthcare experience in quality assurance and quality improvement measurement frameworks (Keogh, 2013; National Advisory Group on the Safety of Patients in England, 2013).

Healthcare policy generally reflects person-centred care as one of the 6 dimensions of healthcare quality (Duncan, 2011) along with safety, effectiveness, efficiency, equity, and timeliness (Institute of Medicine, 2001). Person-centred care is a complex phenomenon. It has been considered as a philosophy, a vision, a general set of aspirations for care provision that reflect the values of healthcare professionals, as a set of clinical practice behaviours, and as a broader form of care provision (Duncan, 2011). Person-centred care is defined as care that is, *"Responsive to individual personal preferences, needs and values and assuring that patient values guide all clinical decisions"* (Duncan et al, 2011, p22). It is characterised in policy terms by, "*Mutually beneficial partnerships between patients, their families and those delivering healthcare services which respect individual needs and values and which demonstrate compassion, continuity, clear communication and shared decision-making*" (The Scottish Government, 2010, p7).

Three key domains of patient experience are considered to be critical to achieving person-centred care provision, i.e.: *(1)* being treated as a unique human being with a life history and plans; *(2)* being recognised as a person capable of developing and exercising autonomy; and *(3)* the flexibility and supportiveness of healthcare practitioner behaviour (Duncan, 2011). The potential for a high quality person-centred healthcare experience depends upon the interaction between features of the healthcare practitioner, care team and care organisation with patient perceptions of care. Patient appraisals of received care are influenced by the characteristics of healthcare services and staff, i.e. what services and staff are like, and what they do (Entwistle, Firnigl, Ryan, Francis, & Kinghorn, 2012). These features all align to support a definition of person-centred care, as being "valued as an individual" (Coyle & Williams, 2001, p451).

Healthcare in the UK is required to deliver care that is clinically effective and safe and to develop and deliver services in partnership with patients and carers (The Health Foundation, 2014). Services are required to assess and improve patients' experiences of healthcare by embedding measures of patient reported experience and other outcome measures in their care governance systems (The Department of Health, 2008). In some settings, the gathering and use of care quality indicators by healthcare providers is mandated by law, e.g. The Scottish Government (2011). While evidence from such care quality indicator data is highly valuable, evaluations of the person-centredness of care also

requires patient validation (McCormack et al., 2010). Care quality must be influenced by not just what the healthcare practitioner does, but how they do it and how each patient appraises that care (Duncan, 2011).

Until relatively recently, it was not clear how to capture and respond to patients' appraisals of the person-centredness of received care in a reliable and valid manner. Previous measures in this domain have significant limitations. Most concentrate on satisfaction with care, use items deemed important to practitioners only, and produce positively skewed results even considering dissatisfaction with certain aspects of care (Coyle & Williams, 1999; Williams, 1994; Williams, Coyle, & Healy, 1998; Williams & Grant, 1998). Measures of patient satisfaction generally do not relate well to care need expectations and mainly fail to capture the complexity of feelings, values and experiences expressed by patients receiving healthcare (Coyle and Williams (2001).

In 2001, a measure of person-centredness became available (Valuing Patients as Individuals VPAIS) (Coyle and Williams (2001). This measure was based on earlier substantive qualitative work (97 interviews) that explored patient appraisal of the degree to which their expectations of care were met. This measure of "personal identity threat" captured patient appraisals of their unmet expectations regarding recently received care, rather than measuring satisfaction with care. Questionnaire items were generated to represent likely elements of care that would relate to this core concept", i.e. the extent to which they were treated as an individual. The VPAIS was comprised of five broad thematic areas: (1) "personalisation" (being treated as a whole person), (2) "empowerment" (having a say in treatment), (3) "information", (4) "approachability and availability of staff" and (5) "respectfulness". An item analysis approach reduced the initial 72 item set down to the final 31 item measure that discriminated male-female response and identified a clear focus for improvements in care provision (Coyle & Williams, 2001).

Since the development of this measure in 2001, healthcare policy initiatives have highlighted the need to measure and evaluate patients' experiences in a manner that is both grounded and sensitive (Wain, Kneebone, & Billings, 2008). Care provision in the UK NHS has changed considerably, particularly the reduction in time that patients remain in hospital. The healthcare system is increasingly under tension from demographic changes and the growth in long-term conditions management. The availability of a robustly developed, reliable and valid measure of person-centred care is timely and of value for use by NHS staff in their routine practice. It is therefore important to review the item content and structure of the VPAIS.

To do this, it was necessary to review the current literature to identify recent developments in measurement and consult key stakeholders to inform the further development of this measure. It was considered necessary to administer and update VPAIS using a large sample to allow a more extensive psychometric evaluation of the measure than was previously possible.

Aim of the study

To renew, further develop and validate the updated Valuing Patients as Individuals Scale (uVPAIS) for use as a patient appraisal of received healthcare.

Research questions

1 What empirically derived patient-centred outcome questionnaires have been developed since the VPAIS tool was published in 2001?
    a. What items are contained in any tools found, and which, if any, of these items are not contained in the VPAIS?
2 Does the updated Valuing Patients as Individuals Scale (uVPAIS) have adequate face validity?
3 How acceptable is the uVPAIS, in terms of patient completion rates, levels of assistance required for participants who have recently experienced secondary healthcare?
4 Is the uVPAIS a reliable measure of the person-centredness of care for participants who have recently experienced secondary healthcare?
5 Does the uVPAIS have good concurrent (convergent) and discriminant validity when compared with an appropriate outcome measure for participants who have recently experienced secondary healthcare?
6 Does a short-scale (uVPAIS-short) show equivalence with the full scale in terms of reliability and validity?

Methods

This study used several research methods, including scoping literature reviews underpinned by systematic search criteria, cognitive testing of questionnaire items using focus groups and exploratory factor analyses of a cross-sectional descriptive dataset (Jones & Rattray, 2015; Khan, Kunz, Kleijnen, & Antes, 2003). UK National Health Service (UK NHS) Ethical approval (10/S1402/51) and Research & Development management approval (2010PSO9) were obtained for the clinical stage of the investigation. Funding was provided by the participating NHS Trust. Figure 1 summarises the methodological stages in the development and validation of the uVPAIS.

Literature Review: Search strategy

A search strategy was tailored for increased specificity, to discover all empirically derived measures of the person-centredness of care from 2000-2012. This initial search was updated recently by a) examining the measures of patient-centred care identified by a more recent scoping review in the grey literature, i.e. De Silva (2014), b) by repeating our scoping searching from 2014 to September 2016 and c) contacting key authors in the field. The outcome of this update is reported following a presentation of the results from this initial search.

The search term “patient-centredness was chosen rather than “person” or “client-centredness” following an initial scope of the literature. We searched, via Ovid, the electronic databases Medline and British Nursing Index and Archive. Searches of Nursing and Allied Health literature database Cumulative Index to Nursing and Allied Health Literature (CINAHL) were supplemented by a structured search of Google Scholar.

The architecture of the initial search adopted the following structure:

1. patient centredness
2. tools/questionnaires
3. 1 AND 2
4. limit 3 to English language with abstract
5. limit 4 to publication year 2000 to 2012 (in the initial review) and 2014-September 2016 (in the update)

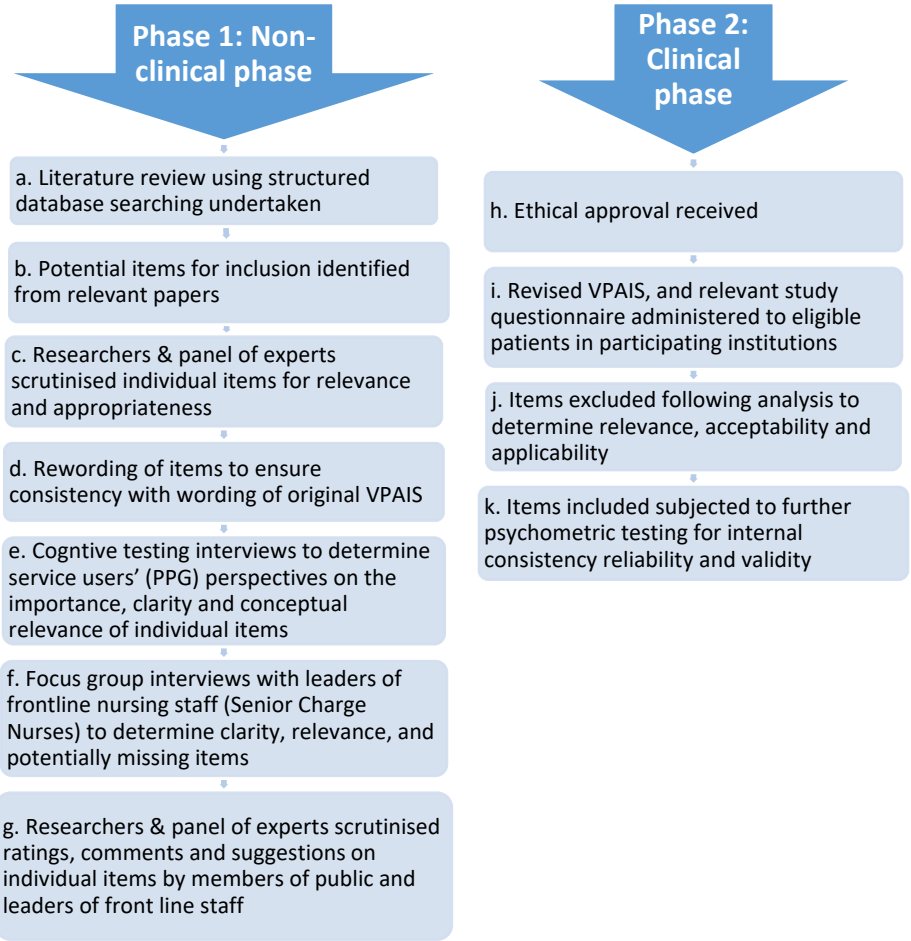

Figure 1: Flow chart of the stages and processes of development and validation of the uVPAIS

Search results were screened to determine publication eligibility. Study inclusion required that a questionnaire was designed to measure the person-centredness of care, was theoretically and/or empirically derived, was relevant for use within general adult services, was written in the English language, and was reported since 2000.

Item construction and Questionnaire development

Two approaches were used to identify items not covered in the original VPAIS. Questionnaires were identified from the initial literature review carried out during the uVPAIS re-development. Items from these were mapped onto the five domains of the original VPAIS and new items that captured patient accounts of the extent to which they were treated as an individual were then added to the original 72 item data set. Table 1 (supplemental materials) provides detail of the contributing instruments. Our plan was to compile the evidence from the literature on updated questionnaire items before we sought the views of the public. Questionnaires and items updates identified from De Silva's (2014) review were also considered more recently to ensure that no more measures had been missed, see Table 2 (supplementary materials).

Face validity and pilot testing of the initial updated measure

Over a series of panel meetings, members of the research team, which included behavioural scientists, psychologists, health service researchers, intensive care specialist, and senior nurses in professional and practice development from the UK NHS Board setting, scrutinised all items obtained for their relevance and appropriateness as indicators of person-centredness. Items considered to be ambiguous were reconsidered and their inclusion status determined by consensus. To ensure consistency, the wordings of all newly identified items were reviewed and, where necessary, modified to correspond with the wording of the items in the original VPAIS, i.e. to capture the personal identify threat represented by each item. The newly generated items were then added to the pool of original items from Coyle & Williams' original VPAIS work.

Service user interviews:

Service users undertook cognitive testing of the importance, conceptual clarity and relevance of the newly generated items (Knafl, Deatrick, Gallo, Holcombe, Bakitas, Dixon, & Grey, 2007). Six members of the public were contacted by the local UK NHS patient and public group (PPG) coordinator to seek their interest in receiving the research information leaflet. All six were then met by a member of the research team (DB) to describe the cognitive testing study and to consent participants. Consented members of the PPG detailed their understanding of each item and rated the importance of each item to being treated as an individual (high, medium or low). Confusing or unclear items were removed from the original 72 VPAIS items and additional items identified from literature review were added to the item bank. All new items were labelled as either positive or negative statements. Participants also suggested and co-created additional items that they considered as important to "being treated as an individual". This public consultation occurred before our focus group discussions with the health professionals.

Senior Charge Nurses (SCN) Focus Groups:

All SCNs working within thirty four wards in Acute Medicine and Surgery in this UK NHS setting were approached with study details and invited to take part one month in advance of the planned interviews. Written consent to take part in the focus group and for the conversation to be audio taped was obtained

by the researcher prior to each focus group. Two focus group interviews were held with 6 staff members. SCNs were asked to identify items that lacked clarity of meaning, items thought to be problematic and to identify items that they thought were missing. None of the items identified by patients were removed or altered.

Data Analysis of Public and Hospital Staff Interviews

Audio tapes were transcribed onto templates numbered in accordance with the 5 broad subdomains of the original VPAIS. Public ratings, including the ratings of positive or negative statements for new items, were entered into SPSS 19 (IBM Corp, IBM SPSS Statistics for Windows) and frequency counts were undertaken. Rating and comments by 6 public and 6 hospital staff were then tabled alongside each item (DB) to allow detailed overview of feedback relating to each item, see Figure 2.

Data Collection and Procedures for validation of the updated VPAIS

The final amended uVPAIS item set was administered consecutively to ALL eligible patients using secondary care in a Scottish Health Board during September 2011 to February 2012. Eligible patients, in this pragmatic convenience sample, were those admitted to target wards who were over 17 and deemed competent to consent by staff. Patients were asked to complete the uVPAIS using a 5 point Likert type response scale (strongly agree (5) to strongly disagree (1)) and including an option to indicate the item did not apply.

The 6 item general satisfaction subscale of the Patient Satisfaction Questionnaire (Ware, Snyder, & Wright, 1976a, 1976b) was also used for validation purposes. This uses a 5 point Likert type response scale (strongly agree (5) to strongly disagree (1)). Finally, a demographic questionnaire included items on gender, age, employment and ethnicity. This set of questionnaires was completed either on discharge, or early return to their home. Those patients filling this series of questionnaires at home returned the battery in a stamped addressed envelope. Those in hospital placed questionnaires in a sealed envelope, addressed to the University and staff placed them in internal mail. A sample size between 200 and 300 was required to reliably identify a factor structure comprising a relatively low number of well-defined factors (Tabachnick & Fidell, 2013).

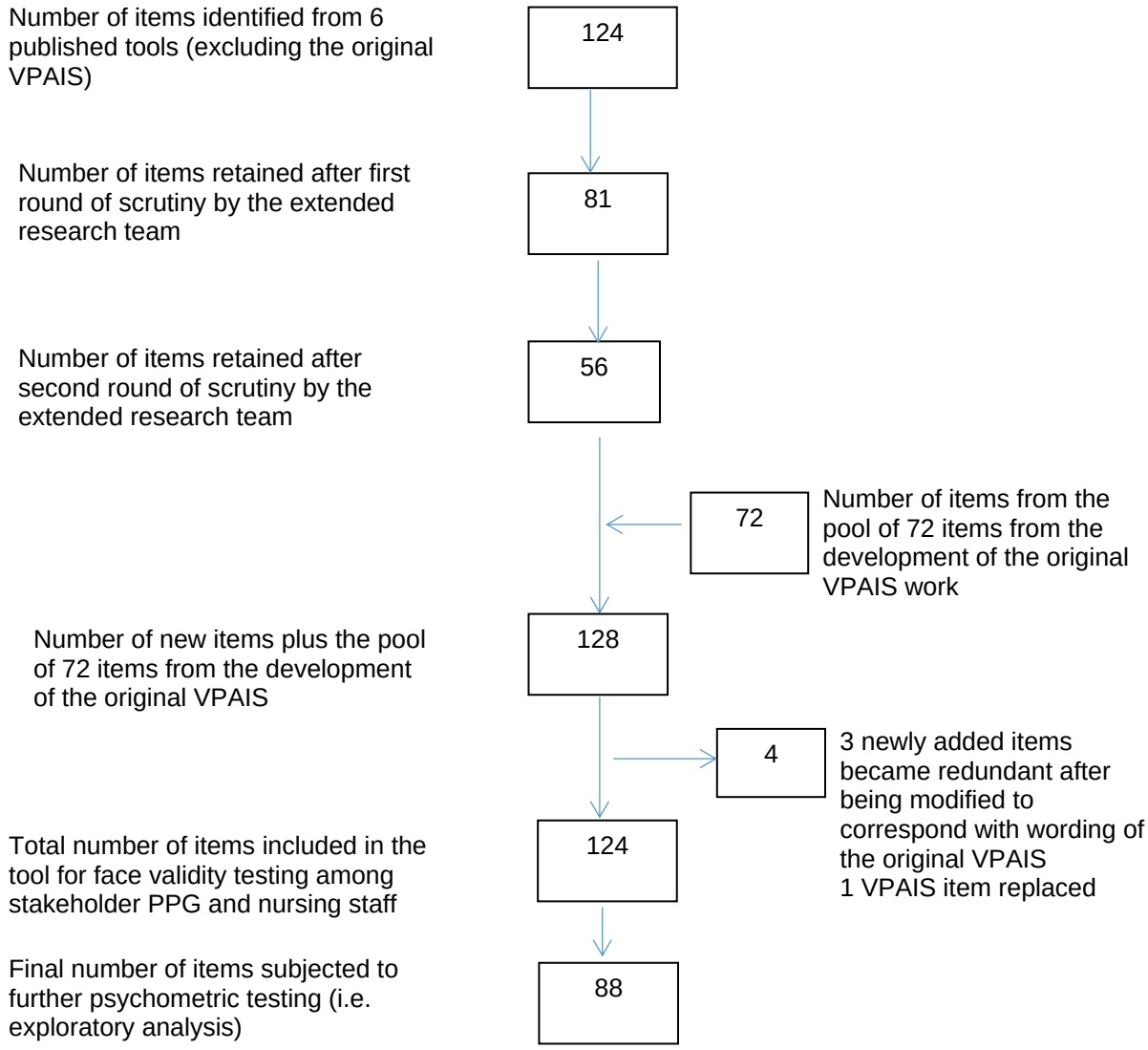

Figure 2: Sources and numbers of items included/excluded at various stages of the uVPAIS development up to the point of testing the uVPAIS with nursing staff and patient and public group

Data screening and preliminary analysis

Data entered into SPSS 19 (IBM Corp, IBM SPSS Statistics for Windows) were screened to locate and correct any errors. Distribution of individual items was assessed (mean ± standard deviation, median, range, skewness and kurtosis). The relevance, acceptability or applicability of individual questionnaire items to patients was investigated using the proportion of missing/not applicable responses. All items with more than 10% missing or not applicable responses were excluded. The remaining items were then subjected to Principal Component Analysis (PCA) with varimax rotation.

Principal Component Analysis, Reliability and validity of questionnaire

Several parameters were examined to investigate the appropriateness of the data for Principal Components Analysis. These included inter-item correlation coefficients (for evidence of multicollinearity or singularity) i.e. the Bartlett's test of sphericity and the Kaiser-Meyer-Olkin (KMO) statistic. Orthogonal varimax rotation technique was used to ensure maximum separation of variable loadings and enhance interpretation (Field, 2013). The number of clusters extracted was also verified using the Scree plot.

The internal consistency reliability of individual subscales was computed using Cronbach's alpha. The 6 item general satisfaction subscale of the Patient Satisfaction Questionnaire (Ware et al., 1976a, 1976b) was used to test concurrent validation examining correlation coefficients with subscales of the uVPAIS questionnaire. Discriminant validity investigations used independent t-test to examine variations in scores between males and females and between white British and other ethnic groups and Pearson's and partial correlations explored relationships between uVPAIS questionnaire subscales and age.

Results

Pre-Clinical stage: Literature search

Searches, which were limited to empirical studies, were conducted on the OVID databases and returned 737 possible publications. Review papers were filtered out, see Table 1 (supplemental information). Titles and abstracts of the retrieved papers were screened for the existence of any questionnaires that met the study inclusion criteria. The reference lists of included papers were also searched. Following this initial screen, a list of possible instruments was generated (n=26 (see Table 1, supplemental information). Publications that reported potential tools for inclusion were excluded if they lacked specificity to general hospital inpatient settings. Six new tools met all study inclusion criteria, in addition to the Coyle & Williams' (2001) publication which describes the development of the original VPAIS, see Table 1 (supplemental information).

Conceptual basis of the measures retrieved from the literature review

Only one of the included studies (i.e. Coyle & Williams, 2001) discussed the underlying conceptual basis of being treated as an individual in great detail. However, within this, three broad areas of theoretical underpinnings could be tracked back to North American nursing literature. These included; (1) a relationship centred practice approach that emphasised the nature of caring relationships from a patient perspective (Duffy, Hoskins, & Seifert, 2007; Hendricks, Vrielink, Smets, Van Es, & De Haes, 2001), (2) a patient satisfaction framework approach based on patient experienced experience (Dufrene, 2000) and (3) a focus based on need-fulfilment (Dozier, Kitzman, Ingersoll, Holmberg, & Schultz, 2001; Jenkinson, Coulter, & Bruster, 2002; Kleefstra et al., 2010). This confirmed our prior

observation that measurement in this area seems limited to reports of patient expectations or satisfaction with care (Coyle & Williams, 2001).

Item inclusion and exclusion

A hundred and twenty four additional items were generated from the 6 additional tools (excluding the original VPAIS publication) identified from the literature search, see Table 1 (supplemental information). Our broad-based research team judged that 56 items were appropriate for inclusion and were added to the pool of 72 items (Coyle & Williams, 2001). On closer inspection, one item of the original VPAIS was replaced with updated content and three newly added items became redundant once reworded to correspond with the VPAIS. Thus the total number of items included in the tool for face validity testing among PPG and healthcare staff was 124 (53 new items 71 items from original VPAIS). The numbers of items included/excluded at various stages prior to testing the updated VPAIS tool among patients and health care staff is shown in Figure 2.

Examination of De Silva (2014) revealed 8 additional eligible instruments which were retrieved, see Table 2 (supplementary materials). Items from these new questionnaires were mapped to the original bank of 124 uVPAIS items. This revealed no broad areas of omission in the uVPAIS bank of items. No additional instruments met our inclusion criteria in an updated search from 2014 to September 2016.

Face validity and pilot testing

Individual PPG member interviews (n=6) were conducted between December 2011 and March 2012. 3 were conducted by DB and 3 by JC. Two focus groups were conducted with SCNs. Thirty eight SCNs were approached to take part in the study, and three SCNs attended each focus group. Medical staff were invited to individual interviews and focus but we were unable to gain their feedback. Detailed feedback was obtained for each item from both members of the public and nurses. This guided an item by item decision regarding item inclusion and wording. Of the 124 items subjected to face validity testing among PPG and healthcare staff, 88 items were retained for subsequent psychometric evaluation among patients in secondary care.

Clinical phase: Demographic characteristics

Two hundred and ninety eligible individuals completed and returned the study questionnaires. Just over half of participants (53.5%) were females and two-thirds were over 56 years of age. Participants were mainly white Scottish/British (99%) and majority were either retired or not in employment (47%), see Table 1. A review of institutional data of for patients aged 16 and over with at least one overnight stay in this setting in 2012 showed that the available population were 96.1% White British and 58% were over 56 years of age. While we distributed 875 questionnaires to the clinical settings only 790 were distributed to patients. This produced a response rate of 37%.

Table 1. Demographic characteristics of patients who responded to questionnaire

Demographic characteristic	n (percentage)
Female	152 (53.5)
Employment type	
Full time paid	72 (26.2)
Part-time paid	26 (9.5)
Not employed/Retired	129 (46.9)
Ethnicity	
White British Scottish/English/Irish/Welsh	273 (98.6)
Others ethnic groups	4 (1.4)
	Mean (SD)
Age	58.51 (17.55)

Principal Component Analysis and item inclusion

Initial investigations found 71 participants had omitted over 10% of items with high level of irrelevance, i.e. ≥10% missing/not applicable, and were removed from the analysis. The remaining sample size of 219 was used for PCA. We used an amended item retention heuristic, excluding items that did not load above 0.40. In addition, items that loaded ≥ .40 in one factor and ≥.35 in another factor were also excluded. This approach produced a simple factor structure, see Table 2.

All 88 items loaded onto an unrotated PCA at >.40, and examination of the scree plot suggested 4 factors. Applying our item retention heuristic, 44 items and a further 9 items were lost in two iterations with EFA using varimax rotation. Iteration 3 led to the loss of 3 further items and suggested a 3 factor solution. A fourth iteration led to the loss of one final item. The final 31 item three factor solution, including the Cronbach's alpha reliability scores for the 3 sub-scales, can be seen in Table 2.

Reliability and validity of the 31 item scale

All three factors showed good internal consistency reliability (Factor 1: Care and Respect=0.94; Factor 2: Understanding and Engagement=0.92 and Factor 3: Patient Concerns=0.78). The patient satisfaction tool had good internal consistency (α=0.89). Bivariate correlations between Factors 1, 2, and 3 were all

Table 2: Item loadings and Cronbach's alpha for subscales of the uVPAIS

Item	Factor 1	Factor 2	Factor 3	Means	SD
Factor 1 Care and Respect 13 items α = 0.94					
9. The nurses treated me as a whole person.	**.77**	.31	.17	4.48	.68
17. Since I have been a patient here the nurses listen to me.	**.70**	.30	.28	4.24	.83
19. The nurses seemed to have thought ahead about what I needed.	**.56**	.26	.27	3.90	.93
21. I felt I received care from competent nurses.	**.70**	.27	.22	4.48	.69
30. The nurses always listened attentively to what I said.	**.77**	.28	.31	4.26	.77
37. The nurses answered all my questions	**.63**	.22	.24	4.14	.84
54. The nurses were very approachable and easy to talk to.	**.82**	.25	.22	4.47	.68
58. The nurses helped make me feel at ease in the hospital.	**.82**	.24	.21	4.39	.70
61. Staff always introduced themselves fully to me, telling me their name and their job title.	**.48**	.33	.09	4.01	.97
63. I felt cared for by the nurses.	**.82**	.29	.19	4.45	.65
70. Since I have been a patient here the nurses treat me kindly.	**.85**	.21	.23	4.48	.62
71. Since I have been a patient here the nurses make me feel comfortable.	**.61**	.10	-.03	4.30	.96
74. The nurses were courteous and friendly towards me.	**.81**	.28	.18	4.49	.59
Factor 2 Understanding and engagement 11 items α = 0.92					
1. My problems were regarded as important by the doctors	.21	**.73**	.09	4.53	.63
2. The doctors were in full possession of the facts of my case	.22	**.73**	.03	4.40	.69
4. The doctors were sensitive to my feelings	.23	**.66**	.17	4.42	.70
5. I was treated as an individual by the doctors	.32	**.73**	.09	4.39	.65
10. The doctors understood fully what I was going through	.27	**.67**	.24	4.27	.74
22. I felt I received care from competent doctors	.32	**.70**	.16	4.51	.64
34. The doctors answered all my questions	.23	**.76**	.21	4.32	.74

51. The doctors were very approachable and easy to talk to	.15	**.60**	.25	4.27	.79
55. I felt very reassured by the doctors	.27	**.70**	.24	4.29	.76
65. The doctors treated me as an intelligent human being.	.20	**.77**	.17	4.24	.75
80. The care and treatment I received helped me to readjust to my circumstances.	.25	**.63**	.14	4.18	.70
Factor 3 Patient concerns, 7 items α = 0.78					
3. I felt the nurses did not fully appreciate the pain I was experiencing	.15	.30	**.43**	4.08	1.10
25. There were times in which I was concerned about the safety and security of my personal belongings/properties in this ward	.12	-.09	**.69**	4.23	.96
38. The staff kept telling me things I didn't want to know.	.17	.21	**.64**	4.30	.75
50. I was often unable to locate nurses for assistance.	.22	.14	**.67**	3.93	1.18
66. Sometimes the staff stood near me talking about me as if I wasn't there.	.29	.22	**.58**	4.17	1.01
77. The doctors didn't seem very concerned about how bad I found the side effects of my treatment.	.11	.25	**.66**	4.12	.83
78. The staff didn't seem to understand how attending hospital has disrupted my life.	.23	.32	**.54**	4.07	.95

Key: Items in bold show the top 3 loading items on each factor.
Note that items on factor 3 have been reversed scored, so a high score suggests high patient-centredness, or that patient concerns were dealt with in a manner that preserved personal identify.
SD= standard deviation

moderate but statistically significant indicating that although the factors are related they are empirically measuring different concepts, see Table 3. The moderate, significant correlations between the uVPAIS subscales and the satisfaction tool indicates that the more patients feel they are valued as individuals, or that their concerns were dealt with in a way that preserved their personal identity, the greater their satisfaction with the care they received.

Table 3. Correlation matrix for subscales of new questionnaire and composite patient satisfaction tool

	Factor 1	Factor 2	Factor 3	Satisfaction
Care and Respect, F1	1	0.64**	0.57**	0.72**
Understanding and Engagement, F2		1	0.53**	0.67**
Patient concerns, F3			1	0.66**
Satisfaction				1

Key: **, p<0.01

Gender, ethnicity and age variations for individual subscales

Significant gender variations were found for factor 1 and factor 3, see Table 4. Women were more likely to report being treated as an individual for factor 1 (Care and Respect) compared to men (t= -2.07, p=0.04). On the other hand, men were less likely to report that their concerns were dealt with in a person-centred manner compared to women for Factor 3 (Patient concerns) (t= -2.33, p=0.02). There was no gender difference in scores for factor 2, Understanding and Engagement (t= 0.14, p=0.89).

No differences in scores were observed between ethnic groupings for any of the three subscales. Age was significantly negatively associated with scores for Factor 1 (r= -0.16, p=0.02) and Factor 3 (r= -0.18 p=0.01). Older people were less likely to feel they were treated as an individual by nursing staff and were less likely to report that their concerns were responded to in a person-centred manner. The association remained significant even after controlling for the effect of gender (r_p= -0.14, p=0.04 for Factor 1 and r_p= -0.16 p=0.02 for Factor 3). When age was controlled for in ANCOVA analysis, gender differences remained for Factor 1, Care and Respect and Factor 3, Patient Concerns, F(2, 214)=4.22, p=.02; F(2, 214)=5.38, p=.005 respectively.

Reliability and validity of a 10 item short scale (uVPAIS-short)

The properties of the top 3 loading items in Factors 1-3 were then examined, see items in bold in Table 2, i.e. items 30, 54, 70, 1, 34, 65, 25, 50 and 77. Cronbach's alpha analysis suggested that adding item 38 to Factor 3 (Patient concerns) significantly improved its internal consistency reliability in the short scale. Hence a 10 item short scale uVPAIS was tested (uVPAIS-short), see Table 5. This uVPAIS-short performed well with the inter-factor correlations comparable to those of the full scale (see Table 6). The

uVPAIS-short is also almost as sensitive to gender differences as the full measure, see Table 7. However, the gender difference on Understanding and Engagement for the uVPAIS-short only approached significance, t=1.89, p=.067.

Table 4: Gender differences on the 31 item uVPAIS short

	Gender	n	Mean	SD	SE
Age	male	103	61.15	16.31	1.61
	female	112	56.08	18.36	1.74
Care and Respect, F1	male	104	54.99	8.85	.87
	female	115	57.12	6.30	.59
Understanding and Engagement , F2	male	104	47.68	5.77	.57
	female	115	47.57	6.05	.56
Patient Concerns, F3	male	104	28.14	4.98	.49
	female	115	29.54	3.91	.36
Satisfaction	male	75	24.29	5.04	.58
	female	84	24.37	4.61	.50

Key: SD = standard deviation, SE= standard error.

Table 5: Factor loadings of the short scale UVPAIS-short

	Factor 1	Factor 2	Factor 3	Means	SD
Care and Respect, F1, α=.90					
30. The nurses always listened attentively to what I said.	**.82**	.27	.26	4.26	.77
54. The nurses were very approachable and easy to talk to.	**.86**	.23	.18	4.47	.68
70. Since I have been a patient here the nurses treat me kindly.	**.89**	.21	.20	4.48	.62
Understanding and engagement, F2,α=.81					
1. My problems were regarded as important by the doctors	.21	**.79**	.07	4.53	.63
34. The doctors answered all my questions	.21	**.81**	.21	4.32	.74
65. The doctors treated me as an intelligent human being.	.22	**.80**	.15	4.24	.75
Patient Concerns, F3, α=.69					
25. There were times in which I was concerned about the safety and security of my personal belongings/property	.19	-.14	**.71**	4.23	.96
38. The staff kept telling me things I didn't want to know.	.09	.28	**.75**	4.30	.75
50. I was often unable to locate nurses for assistance.	.25	.13	**.67**	3.93	1.17
77. The doctors didn't seem very concerned about how bad I found the side effects of my treatment.	.11	.30	**.63**	4.12	.83

Key: SD = standard deviation

Table 6. Correlations between scales on the 10 item uVPAIS

	Factor 1	Factor 2	Factor 3	Satisfaction
Care and Respect, F1	1	.51**	.48**	.67**
Understanding and Engagement, F2		1	.39**	.58**
Patient concerns, F3			1	.53**
Satisfaction				1

Key: **, p<0.01

Table 7: Gender differences on three scales of the short uVPAIS

	Gender	n	Means	SD	SE
Care and Respect, F1	male	104	12.97	2.24	.22
	female	115	13.45	1.51	.14
Understanding and Engagement, F2	male	104	13.14	1.75	.17
	female	115	13.05	1.86	.17
Patient Concerns, F3	male	104	16.12	2.98	.29
	female	115	16.97	2.37	.22

Key: SD = standard deviation, SE = standard error

Discussion

This study used a range of approaches to produce an updated, more comprehensive version of the VPAIS (Coyle and Williams, 2001). This update incorporates advances in the way that person-centredness is conceptualised and measured (e.g. McCance et al., 2011), while maintaining a primary focus on personal identify threat, i.e. capturing patient appraisals of their unmet expectations of received care. This uVPAIS is conceptually and empirically robust and captures three concepts that underpin the degree to which patients feel that they are treated as individuals within secondary healthcare settings. It is conceptually distinct from satisfaction with care. This update is timely given recent policy imperatives to assess and improve the person-centredness of care (The Health Foundation, 2014; The Scottish Government, 2010, 2011) and concern regarding service delivery (Frances, 2013; Keogh, 2013; National Advisory Group on the Safety of Patients in England, 2013).

Additional questionnaires identified by our literature review had poorly specified conceptual and theoretical underpinnings and were limited to reports of patient satisfaction with care (RQ 1a). The review identified 56 additional items that could be, where necessary, reworded and then mapped to the five domains of the original VPAIS (RQ 1b), reflecting changes in the way terms such as person-centredness is conceptualised e.g. (Duncan, 2011; McCance et al., 2011). An update of this initial

literature review revealed that while 8 additional measures have been developed in this field since our original scope, no areas of omission were noted in the initial uVPAIS item bank. In particular, there were no additional measures that specifically targeted further patient appraisals of "personal identity threat".

The acceptability of the uVPAIS was shown in reasonable return rates (37%) and relatively good completion rates (RQ3), e.g. when compared to National NHS survey return rates which range from 28-59% (Care Commission, 2016; Graham, 2007). Our public engagement work, and low levels of missing data within the returned questionnaires confirmed that the uVPAIS targets the person-centred care issues that are important to the public (RQ3) and that it can be completed with low levels of assistance. The involvement of stakeholder PPG and clinical staff ensured that the face validity of the measure was ensured and the uVPAIS was meaningful to both patients and staff (RQ 2). Positive comments from PPG representatives during the development phase further suggested the acceptability of the measure in this UK NHS setting.

After a rigorous factor analytic process with several iterations, a 31-item, three factor solution emerged. These factors focussed on threats to personal identity arising from health practitioner characteristics, practitioner behaviours and from the ward environment and culture. Items related to perceptions of enablement and empowerment crossed all three factors rather than forming a distinct domain. The Care and Respect, Understanding and Engagement and Patient Concerns factors each demonstrated excellent reliability in the long form uVPAIS, with Cronbach's alpha exceeding 0.7 (RQ4). The uVPAIS has excellent reliability, concurrent and discriminant validity (in terms of gender) (RQ5).

Exploration of the short-scale uVPAIS, using the top 3 or 4 loading items on each uVPAIS-short factor, suggested that it performed almost as well as the full 31 item measure (RQ5, 6) in terms of its reliability (RQ4). The short-scale uVPAIS also has good concurrent and discriminant validity. It had significant correlation with a 6 item patient satisfaction scale (Ware et al., 1976a, 1976b) and discriminated gender differences, (RQ5). This is a notable strength. Depending on the purpose, time and resources, either version of the uVPAIS can be used to capture patient appraisals of received care with a good degree of confidence. The uVPAIS-short is suitable for use by hospitals and investigators who want to conduct a rapid assessment of patients' views of the person-centredness of their care provision within a short period of time. The full uVPAIS is appropriate if investigators require a more detailed examination of care provision (RQ6).

The uVPAIS also has other strengths. The full set of items relate well to recent elaborations of the conceptual structure of person-centredness and detail the issues that matter most to people using healthcare (e.g. Entwistle et al., 2012). This measure contains items that closely relate to feelings of enablement or empowerment, e.g. "*I felt cared for by the nurses*", "*My problems were regarded as important by the doctors*". Other items relate to the characteristics of the service or practitioner, e.g. "*The nurses were very approachable and easy to talk to*", "*the doctors were in full possession of the facts of my case*". Other items, if poorly appraised, capture potential threats to personal identity arising from staff behaviour, e.g. "*the doctors answered all my questions*" and, "*since I have been here the nurses treated me kindly*". The Patient concerns factor (F3), contained items targeting the characteristics of the service and concerns regarding received care that relate to the ward environment and culture, for example, "*I was unable to locate nurses for assistance*", and, "*the staff did not seem to*

understand how attending hospital has disrupted my life". The uVPAIS may also be sensitive to patient vulnerability, given that it detected that older patients were less likely to feel they were treated as an individual by nursing staff, and were less likely to report that their concerns were responded to in a person-centered manner. A breakdown in the kindness, respect and consideration shown to older patients are commonly reported (Cornwell, Levenson, Sonola, & Poteliakhoff, 2012). The uVPAIS may be a useful resource to routinely audit patient experience and to support communication with vulnerable older patients. The uVPAIS also captures items that care staff consider to be key indicators of patient-centred care (Zill et al, 2015) capturing care appraisals of patient individuality, involvement in care, access to information, feelings of empowerment and clinician-patient communication. Finally, our use of Principal Components Analysis to evaluate the reliability and validity of both versions of uVPAIS was far more rigorous, robust and defensible than the original item analysis approach.

This study represents an initial exploration of this updated uVPAIS measure in a relatively small, but statistically sufficient, data set. Given the importance of measuring and evaluating patient experience, it is important to confirm the structure of the uVPAIS in both long and short forms in an independent data set using Confirmatory Factor Analysis. We recommend the administration of the 31 uVPAIS items, along with 6 item general satisfaction subscale of the Patient Satisfaction Questionnaire (Ware et al., 1976a, 1976b) to a larger sample of patients (e.g. about $N \geq 750$) to confirm the stability of this solution.

The findings of this study are timely given a range of recent policy initiatives focused on the need to improve patient experience following failings in the provision of person-centred care (The Health Foundation, 2014; The Scottish Government, 2010) and recent conceptualisations regarding person-centred care frameworks (McCormack and McCance 2017). The need for a structured, reliable and valid measure to accurately measure the key care-related issues that matter most to patients during their hospital care is a constant theme throughout recent policy recommendation (Clywd & Hart, 2013; Frances, 2013; Keogh, 2013; National Advisory Group on the Safety of Patients in England, 2013; The Department of Health, 2008). The collection of routine data using the long and short form uVPAIS has the potential to allow clinical teams to understand variances in their patients' self-reported appraisals of person-centredness of care (Cornwell et al., 2012) to gather data near real-time, possibly using volunteers, to facilitate staff sensitivity to patient-centred care issues (Clywd & Hart, 2013) and to respond to such information to stimulate improvements in personalised care delivery (The Department of Health, 2008). This measure augments a recent measure that targets nurse reports of their own person-centred performance which is underpinned by an influential person-centred care framework (McCance Hastings & Dowler, 2015; McCormack & McCance, 2017).

Our study has several limitations. The first relates to the use of the search term of "patient centredness". This search strategy identified a wide range of candidate papers/measures from which six met our inclusion criteria, in addition to Coyle & Williams (2001). Including other terms, such as "person-centredness" or "person-centred care" may have generated additional questionnaires. It may also have produced more noise to filter, i.e. producing a more sensitive, but less specific search. Our initial scoping searches suggested the latter would be the case. A second limitation relates to the mean scores of items on the Care and Respect and Understanding and Engagement factors. Scores on these

scales were positively skewed in this dataset, which may limit the scale's potential to detect improvement. This limitation applied less to the Patient Concerns scale. Rewording of the positively skewed scales may produce a scale with greater potential to detect change. A third limitation relates to the reduction of item number during factor analysis by statistical considerations. This may have led to the removal of questionnaire items that were deemed important in policy terms and by patients and clinical staff. Securing engagement from medical staff may have altered the number of items included in the uVPAIS questionnaire prior to psychometric evaluation. Due to an administrative oversight, we were unable to report separate patient demographic data relating to retirement and unemployment, although we note that 43% of our sample were over 65 years of age. Finally, the uVPAIS was administered to patients whilst in hospital, who may have been unwilling to be critical of care while still in receipt of it (Clywd & Hart, 2013; Coyle & Williams, 1999, 2001). This may have negatively affected our response rates. We did not gather data on geographical deprivation in our pragmatic sample and were unable to identify sampling bias in these terms. Despite this, we note that our study sample was similar in terms of age, gender and ethnicity to routinely gathered NHS overnight stay data collected in the same setting.

Further development of the uVPAIS is needed to pilot and examine use of this measure in practice development or service improvement work. Further exploration is required to establish how best to use this measures to guide reflections on healthcare practitioner practice and to stimulate changes in areas of practice that fail to deliver person-centred care. The short scale version shows promise for near real-time evaluation of patient experience at point of discharge or gathered by people out with the healthcare team including trained volunteers who are more likely to enable patient response as suggested in a recent report (Clywd & Hart, 2013).

This measure is of potentially significant value to the UK NHS and has been implemented in routine data collection locally as part of service improvement initiatives in the current study setting. Being treated as a person is a key health care quality indicator (Frances, 2013; Keogh, 2013; The Department of Health, 2008) and reflects patient expectation in most first world countries. This tool has the potential to be of use within health care systems beyond the UK NHS, given that scale items were generated from an international literature. This update of the VPAIS was needed given healthcare policy drivers that require measurement of person-centred care (Cornwell et al., 2012). The uVPAIS is a reliable and valid measure that has been specifically designed to capture issues that matter most to people receiving secondary care. Both versions of the uVPAIS are now sufficiently developed for routine data collection of patient appraisals of the "person-centredness" of care delivery.

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